

University of Bahrain

*College of Information Technology
Department of Computer Science*

ITCS252 Discrete Structures

First Semester 2013/2014

Exam #2 – 60 Minutes

STUDENT NAME	
STUDENT#	
SECTION	

This exam contains 4 pages (including this cover page) and 5 questions. Check to see if any pages are missing. Enter all requested information on the top of this page, and put your initials on the top of every page, in case the pages become separated.

You are allowed to use Calculators.

You *are not allowed* to use books, notes, or mobiles

Question	Points	Score
1	6	
2	8	
3	8	
4	6	
5	8	
Total:	36	

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Dr. Yousif Al-Jazeeri

Sections# 1 & 4

Sections# 2 & 3 & 5 (Coordinator)

(1) Prove or give a counterexample to the following statements.

(a) [2 points] The number $2t - 17$ is odd for any integer t .

(b) [2 points] There is a perfect square that is the sum of two perfect squares.

(c) [2 points] For any real number x , if $x^2 + x + 1 < 13$, then $x < 3$.

Hint: What is the contrapositive statement?

(2) Let $U = \{\emptyset, 1, 2\}$, $A = \{\emptyset, 1\}$, $B = \{1\}$.

(a) [2 points] Find $|P(P(P(A)))| =$ _____

(b) [2 points] Find $P(A) \cap P(B) =$ _____

(c) [2 points] Find $\overline{B} - A =$ _____

(d) [2 points] Is $B \subseteq P(A)$? Why?

if $A \subseteq B$ and $C \subseteq A - B$, then $C = \emptyset$

[illegible]